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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,555	12/08/2004	Yuichi Nishihara	405507-0030	3859

7590 07/16/2007
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EXAMINER

LEBRON, JANNELLE M

ART UNIT	PAPER NUMBER
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2861

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07/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,555	Applicant(s) NISHIHARA, YUICHI	
	Examiner Jannelle M. Lebron	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 4-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/08/2004; 05/21/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on 04/24/2007 is acknowledged. The traversal is on the ground(s) that the special technical feature is the changeability of a discharge characteristic of the piezoelectric element attached to an expendable tank that is not found in prior art. This is not found persuasive because the limitation is not patentable over prior art as indicated in the rejection below.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claim 1 is objected to because of the following informalities: in line 12, "the cycle" should be replaced with – the cycle information – so that it does not lack antecedent basis. Appropriate correction is required.

3. Claim 1 is objected to because of the following informalities: in line 14, the word "vary" should be replaced with -- varying --. Appropriate correction is required.

4. Claims 2 and 3 are objected to because of the following informalities: the word wherein is duplicated in lines 2 and 3. Appropriate correction is required.

5. Claim 4 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukada et al. (US 2002/0012015) in view of Takamura et al. (US 6,504,701).

8. Tsukada et al. discloses an expendable container [liquid container 1] capable of measuring a residual quantity of stored expendable [paragraph 0074 and Abstract], the expendable container comprising:

an expendable tank [container] configured to store the expendable [ink] and has a piezoelectric element actuator 106] attached thereto [as seen in figs. 1A-2; paragraph 0086];

a detection signal generation circuit configured to charge and discharge the piezoelectric element [with electrodes; paragraphs 0082 and 0141], and generate a detection signal including cycle information, the cycle information representing a cycle of an output voltage wave of the piezoelectric element after the discharge [from the residual vibration; paragraphs 0099, 0100 and 0142]; wherein

the cycle information is available for determining whether the residual quantity of the expendable is greater than a preset level [paragraphs 0087 and 0087; it detects whether the liquid is above or below a certain level].

Even though Tsukada et al. discloses a control module [861] configured to control the printhead operation [which include the charge and the discharge of the piezoelectric element], it does not expressly teach the following:

- Claim 1:

the control module is capable of varying a discharge characteristic of the piezoelectric element.

- Claim 2:

wherein the control module is capable of varying a discharge time constant of the piezoelectric element.

- Claim 3:

wherein the control module is capable of varying a discharge time of the piezoelectric element.

Takamura et al. discloses a CMOS drive circuit that drives a piezoelectric member as a capacitive element in an inkjet head. The discharge operation of the piezoelectric is controlled by the timing set by the circuit [Abstract]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Tsukada et al. invention to include means for controlling a discharge time of the piezoelectric element as taught by Takamura et al. for the purpose of setting a proper value at which desired operating speed, high reliability and low power consumption are achieved.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jannelle M. Lebron whose telephone number is (571) 272-2729. The examiner can normally be reached on Monday thru Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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AU 2861
07/06/2007



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SUPERVISORY PATENT EXAMINER